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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

The Soviet Truck Industry: Status And Prospects

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
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INTELLIGENCE MEMORANDUM

The Soviet Truck Industry: Status And Prospects

Introduction

The USSR's goals for the truck industry during the present five-year plan period (1966-70) have proved to be overly ambitious. They testify, however, to both the need and the determination of the USSR to expand truck production. This need is especially great for heavy vehicles to be used in general transport service as well as for light pickup and delivery vehicles. The USSR is now establishing a large-scale truck production facility to produce 150,000 eight-ton to eleven-ton trucks per year in the late 1970s. This complex of facilities will probably require more than $1 billion in total investment. It is to be built in addition to major expansions in existing truck plants.

The purpose of this memorandum is to examine the Soviet truck industry and truck park and the requirements for trucks implicit in the planned development of highway transportation. The following questions are pertinent:

How well does truck production satisfy the needs of the economy?

What changes may be taking place in priorities for certain types of trucks?

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What is the probability that the Soviet economy will be able to achieve from its own resources the growth rate desired for the truck industry?

To what extent is expansion dependent on equipment from the Industrial West, particularly the United States?

The impending visit of Henry Ford II to the USSR points up keen Soviet interest in obtaining US technology, which is the most advanced in the world for truck production facilities.

Current Production Program

1. In 1969 the Soviet truck industry produced 504,500 trucks, compared with the output of 1,920,400 trucks in the United States. Differences in product mix, however, are far greater than the overall statistics indicate. The Soviet industry produces relatively few heavy units for general transport service and even fewer light trucks for parcel delivery and general service uses. Instead, Soviet output has been concentrated on medium-size models with 2.5-ton to 5.0-ton carrying capacity; these account for about 85% of total output. In contrast, the US industry produces relatively few medium-size trucks, and 60% of total output consists of light trucks (less than 1-ton capacity).

2. The Soviet industry differs from that in the United States in the production of a relatively large number of all-wheel-drive trucks. Very few trucks of this sort are needed in the United States. The Soviet road system is extremely primitive, particularly in Siberia and the far north, where prospecting and extraction of raw materials require a considerable amount of ground transportation.

3. Two plants, the Gor'kiy Motor Vehicle Plant (GAZ) and the Moscow Plant named for Likhachev (ZIL), together account for more than 80% of total Soviet truck output. Six other plants, none of which produce more than 25,000 trucks per year, supply the remainder.

Organization of the Soviet Truck Industry

4. The Soviet truck industry is under the control of the Ministry for the Motor Vehicle Industry. Nine basic models, from 1-ton pickups to 27-ton off-highway dump trucks, are produced (see the table and the photographs). Only seven basic models of engines are made, of which three are obsolete and being phased out.

5. Maximum specialization, standardization, and interchangeability of parts between models is practiced. For example, the Moscow plant produces only a conventional 4 x 2* truck of 5-ton cargo-carrying capacity (the ZIL-130) and a 6 x 6 truck

* *In this expression, the first digit indicates the number of wheels* [footnote continued on p. 4]

Soviet Production of Trucks
by Producer and by Type

Size Class	Producer	Nominal Cargo Capacity (Metric Tons)	Estimated Production By Producer	Estimated Production By Size Class
Light	Ul'yanovsk	1.0	15,000	15,000
Medium	Gor'kiy	2.5, 4.0	253,000	426,000
	Kutaisi	4.5	13,000	
	Moscow	5.0	160,000	
Medium-heavy	Miass	7.5	13,000	37,000
	Minsk	8.5	24,000	
Heavy	Kremenchug	12.0, 14.0	19,000	19,000
Off-highway	Zhodino	27.0	6,000	6,000
Unspecified			1,500 a/	1,500 a/
Total b/			*504,500*	*504,500*

a. Includes a few eight-wheel-drive prime movers produced for military and civilian purposes.
b. Reported in official statistics.

of 5-ton cargo-carrying capacity (the ZIL-131). These trucks use the same ZIL-130 V-8 gasoline engines and many other parts in common. The Ural Truck Plant at Miass specializes in the production of a three-axle, 7½-ton truck, with and without front-wheel drive. It uses the ZIL-375 engine, which is the ZIL-130 engine bored slightly oversize for increased horsepower. All diesel engines for Minsk and Kremenchug trucks are made by the Yaroslavl' Engine Factory. Many of the engines for the Gor'kiy trucks are made by a subsidiary plant, the Zavolzhye Engine Plant. The Moscow ZIL plant now makes all its engines at the main location in Moscow but has plans for establishing a specialized engine plant at a remote location.

6. It is apparent that centralized control and absence of competition provides the Soviet truck industry with many opportunities for manufacturing economies not available to US firms.

(wheels with dual tires count as single wheels) and the second digit indicates the number of wheels that transmit power. For example, a 4 x 4 or a 6 x 6 truck is an all-wheel-drive truck.

For example, US firms must offer a large choice of wheelbase, engine, transmission, and axle options. Chevrolet, which is typical of US truck producers, offers seven gasoline and three diesel engine options for trucks similar to the ZIL-130. Moreover, the engines can be mated with any of 16 different transmissions produced by five different manufacturers. US trucks have individual features within a general design, but all ZIL-130 trucks are alike.

7. The Soviet truck industry is oriented toward mass production of a few models with small regard for the special needs of some end users, in contrast to the US truck industry, which is consumer oriented. Production runs are further increased by long time intervals between model changes. Soviet trucks are relatively cheap -- the ZIL-130 sells for about $3,100 (2,800 rubles) and the GAZ-53A for about $2,400 (2,200 rubles) -- compared with prices of $4,435 and $3,300, respectively, for analogous US trucks. The high degree of standardization of the Soviet industry has led to a number of dis-economies where trucks must be used which are not optimally equipped as to engine power, transmission and axle ratios, wheelbase, and body type for particular applications. The program for development of the motor vehicle industry provides for expansion of the presently limited number of types and sizes of trucks.

Level of Technology

8. Soviet truck technology is based on US technology, but in production techniques and product design is about equal to US industry in 1945. The first major Soviet truck plant was established at Gor'kiy in 1932 using the architectural drawings of the Ford River Rouge Plant, the technical advice of Ford engineers, and the equipment for producing the, by then, obsolete Model-A Ford.

9. Since that time, all new models have incorporated US design and practice. At present, the truck industry is in the process of converting to V-form engines (based primarily on Chrysler design of the late 1950s) and is increasing the carrying capacity of standard models. In many respects, modern Soviet trucks incorporate advanced features. For example, all trucks with carrying capacities in excess of 4 tons have power steering and air brakes as standard equipment.

10. The major weaknesses in the quality of Soviet trucks stem from the quality of materials used and the control maintained over the work processes. Soviet truck metallurgy apparently is not up to US standards. Soviet trucks are heavier in proportion to their cargo capacity than comparable US trucks. Engines are designed with low compression ratios to burn low octane fuel (72 octane is average for trucks). Excessive weight and low compression ratios cause excessive fuel consumption and reduced work performance.

11. The Soviet industry is behind US and other Western truck industry in management practices. Soviet plants resist carrying out scheduled model changes because change-overs take so long that production is substantially lowered and bonus pay is lost for long periods. For example, the GAZ-51 (a 2½-ton, six-cylinder truck), now 24 years old, is still in production. Its replacement, the GAZ-53 (a 4-ton, eight-cylinder truck), was approved about 1960. The Gor'kiy plant did not produce the new model until 1964 and has not yet completely discontinued the GAZ-51, which has been slightly modernized and redesignated GAZ-52. Although capital equipment and labor force have grown considerably at Gor'kiy during the past ten years, output of motor vehicles has grown much less.

12. Although automated equipment is common in Soviet truck plants, much of it is getting old, and its productivity is comparatively low by Western standards. Soviet industry is generally slow in replacing obsolescent but serviceable equipment. Computer-assisted management and process control are only in the initial stages in the largest plants and are not widespread throughout the industry.

13. The USSR desires to obtain the latest production technology from the Free World. In many cases, that technology is available only from US machine tool builders or their Free World subsidiaries and licensees.

Allocation and Use of the Soviet Truck Park

14. The civilian truck park of the USSR now appears to be quite inadequate for the needs of

the economy and has been growing slower than GNP for the last ten years, as shown in the following tabulation:

	1960	1965	1966	1967	1968	1969
GNP (billion 1968 $)	272	360	385	410	434	449
Index (1960 = 100)	100	132	142	151	160	165
Civilian truck park a/ (thousand)	3,140	3,900	4,030	4,160	4,330	4,500
Index (1960 = 100)	100	124	128	132	138	143

a. Estimated.

The USSR's current inventory of trucks is about one-fourth that of the United States. The Soviet transportation system has always depended on the railroads for the movement of industrial goods, and the USSR truck park is oriented toward providing transportation primarily for agriculture, construction, and local hauling (of the railroad express type).

15. The total Soviet truck park contains between 4.5 million and 5 million vehicles. Of these, the military forces hold less than 5%, the state and collective farms about 25%, the motor transport firms (common carrier services) about 13%, and the rest are held by individual enterprises in industry, construction, the trade system, and other state organizations.

16. Neither agriculture nor the military forces have enough trucks to satisfy peak requirements. During periods of military mobilization, such as occurred during the invasion of Czechoslovakia in 1968, some vehicles of civilian motor transport firms are diverted to military uses. Because of the general shortage of all-wheel-drive trucks, the motor pools of the Soviet military forces contain many conventional drive vehicles. Because general-purpose motor vehicles are found in both the military forces and the civilian economy, it is not possible to distinguish by model between Soviet military and civilian trucks.

17. Agriculture, which has a park of about 1.2 million trucks, must be assisted during the

summer harvest with trucks from the motor transport firms as well as by military motor transport battalions. Secretary Brezhnev reported to the October 1968 Plenum that some 600,000 trucks have to be diverted from other uses to assist agriculture for three or four months at harvest time. Because the harvest in 1968 coincided with the emergency mobilization of military units for the invasion of Czechoslovakia, a transportation crisis developed and agriculture suffered some losses. Moreover, the assortment of trucks assigned to agriculture is inadequate. More dump trucks and trucks with elevating bodies are needed to facilitate the movement of grain and other farm commodities.

18. The truck park is poorly equipped to support the construction industry. Most dump trucks are small (2.5-ton to 4.0-ton capacity); trucks used to transport wet concrete are small and poorly designed for the purpose (the aggregate in the concrete stratifies during transportation) or are ordinary dump trucks through the tailgates of which the dissolved cement powder and fine aggregate can leak out. Heavy trucks for transporting steel, timber, and prefabricated concrete structural parts are in very short supply.

19. The common carrier motor pools are overloaded with inefficiently small trucks. Three-fourths of the trucks in common carrier service have a cargo capacity of three tons or less. Nearly all are of the general-purpose stake and platform type. Closed vans for protecting goods in shipment and tractor-trailer rigs are in very short supply.

20. One serious criticism of the distribution of Soviet trucks is that more of them should be in the common carrier motor pools where they can be more fully utilized, hauling more freight at lower cost. The Deputy Minister of Highway Transportation of the Russian Republic (RSFSR) recently complained that since 1965 common carriers have been receiving few new vehicles, not enough even to compensate for attrition, so that the number available to the common carrier system has been declining.

21. In recent years the need has grown for heavy highway freight vehicles to handle certain intercity shipments now being handled by rail with

considerably less efficiency. Despite shortcomings, trucks hauled much larger loads over longer distances in 1968 than in 1960. During the 1960-68 period, total motor freight tonnage increased by 41%, and total motor freight ton-kilometer turnover increased by 78%. Measured in ton-kilometers, trucks now haul about one-tenth as much freight as the railroads.

22. The development of Soviet international trucking services got its start in May 1969 with the opening of twice-weekly "commercial and diplomatic" service between Moscow and Helsinki. Sovtransavto, a new central administration, has been charged with establishing international motor freight routes between the USSR and the countries of Eastern and Western Europe. Routes are planned to Sweden, Italy, and the Netherlands.

23. Large remote areas of the USSR are being opened up to mining and industry faster than railroads can be built, and, in some cases, geological conditions preclude the economic construction of railroads. Movement of goods in and out of these areas is being done either by expensive air transport or by inconvenient water transport. The waterways are frozen during most of the year and generally flow north-south, whereas the major traffic movement is in an east-west direction. Large all-wheel-drive trucks are badly needed for these areas.

24. At the other end of the scale, the Soviet motor vehicle park has very few light trucks, and complaints are common that 4-ton trucks are uneconomically used to carry small numbers of parcels weighing a few pounds. Although the USSR lacks the extensive service industries which in the United States require millions of pickup and delivery vehicles, it nevertheless has a long-neglected need to increase the inventories of small size trucks. The need for substantially increasing the numbers of heavy cargo trucks and light delivery vehicles in the inventory was recognized in the seventh five-year plan (1966-70), but the investment necessary to validate the plan was not allocated.

25. A perennial problem for the Soviet truck industry is the production of spare parts in the

proper assortment and the distribution of parts to repair organizations. The major vehicle plants are called on to ship parts to any state enterprise that orders them rather than distribute them through a decentralized, factory-controlled system of regional warehouses, as is done in the Industrial West. As a result, the Gor'kiy Motor Vehicle Plant supplies parts to more than 3,000 consignees. Because parts are not regularly available through regional and local distribution points, repair organizations can have vehicles tied up for lack of parts that are really in plentiful supply but frozen into the inventories of other repair organizations. Moreover, excessive quantities of parts are used because of the shortage of vehicles. The lack of meaningful cost accounting at enterprises leads truck operators to overhaul vehicles that should be scrapped. Increasing truck production and retiring old vehicles would help reduce spare parts requirements.

Programs for Development of the Industry

26. The USSR originally planned to increase annual truck production from 380,000 in 1965 to between 600,000 and 650,000 in 1970. In January 1968 a new plan goal was announced that called for the production of 750,000 trucks in 1970. As the following tabulation shows, these goals proved to be so far out of reach as to call into question the methods used by the planners.

Year	Production (Thousand)	Rate of Growth (Percent)
1966	408	7.4
1967	437	7.1
1968	478	9.4
1969	504	5.4
1970 a/	542	7.5

a. *Estimated.*

27. Most of the plants of the truck building industry are engaged in some kind of expansion or modernization program, but the exact capacity goals and dates for completion are not known. Some of the programs, such as that for Gor'kiy, were in

process long before the present five-year plan period. Other programs are revised extensively, even while the process of modernizing is under way. For example, at ZIL plant in Moscow the five-year plan (1966-70) called for a 50% increase of capacity by 1970. However, in 1967 the plant director stated that output, then up to 450 trucks a day, would be increased to as many as a thousand a day, but he failed to set a date. The new capacity for producing up to 130,000 light pickup and delivery trucks annually at Ul'yanovsk is not materializing. Estimated production at Ul'yanovsk for 1970 is some 15,000 light trucks and 25,000 jeeps.

28. It seems likely that the construction program of the motor vehicle industry is suffering from the general overtaxing of the resources of the construction industry, which presently retards the completion of many large Soviet investment projects. Even the showcase passenger car plant under construction at Tol'yatti, the largest and most expensive manufacturing facility ever built in the USSR, did not begin production in December 1969 as planned, and will probably not produce cars in series before the end of 1970. Actually, the Tol'yatti construction record is very good by Soviet standards.

29. Despite the USSR's inability to complete on schedule the expansion programs for existing truck plants, extensive new capacity is planned for the next few years. Preparation for the construction of a large industrial complex is now under way in the Tatar Republic at Naberezhnyye Chelny on the Kama River. Construction has hardly begun, and plans are still in a state of flux. It appears from press discussion, however, that the intention of the planners is to build several different models of large diesel-powered trucks. This facility is identified as the Kama Motor Vehicle Plant. Preliminary plans state that the plant is to have an eventual capacity of 150,000 trucks per year. The production of diesel units is planned with emphasis on the truck-tractor variant in two and three axle models with 8-ton and 11-ton load capacities. Production of the 8-ton model is to begin in 1974. Some of the trucks will be fitted with multiple-axle drive so they can provide freight service in areas with bad roads. This project is very large scale. It could cost substantially more than the

billion dollar Tol'yatti passenger car plant, and its projected output rate exceeds that of any existing plant for large-size trucks.

30. Although preliminary construction activities have already been undertaken at Naberezhnyye Chelny, shop layout and product planning are probably only in the preliminary stages. The USSR is actively seeking technological advice and assistance for this project from the United States. The USSR has discussed possible technical assistance contracts with firms in Italy, the United Kingdom, West Germany, France, and Japan, but they have made no commitments. Initially, the USSR hoped to pay for technical assistance with finished trucks, but no Western firm would accept these terms. Although the USSR has recently spoken of building the plant with its own resources and with expertise available in Eastern Europe, it continues to indicate an interest in buying US truck technology. The Soviet invitation to Henry Ford II, who is scheduled to visit the USSR in April 1970, is probably intended to explore the prospects for technological assistance.

31. Soviet persistence in seeking US technology reflects a high regard for its quality despite the consistent post-World War II record of the US government in denying export licenses for equipment and technology for the Soviet truck industry. In the early 1960s the ZIL plant in Moscow sought US crankshaft turning and grinding machines and automatic transfer lines for machining engine blocks for the new ZIL V-8 engine. In 1968, apparently heartened by US willingness to supply machine tools for Soviet passenger car plants, ZIL attempted to buy a modern $60 million foundry from a US firm. Although an export license was refused for the foundry, Soviet officials indicate they want to renegotiate. Furthermore, the USSR is trying to buy US axle gear cutting machines for several existing truck plants, including ZIL.

Probable Developments in the 1970s

32. The Soviet planners intend to accelerate the development of the truck manufacturing industry in keeping with the transportation needs of the economy. Increased production of medium-size trucks at Gor'kiy and Likhachev and of light trucks at Ul'yanovsk is expected. Apparently little will be

done in the early 1970s to expand output of heavy and medium-heavy trucks at Kremenchug and Minsk. Instead, the projected truck production complex at Naberezhnyye Chelny is intended to satisfy this requirement.

33. Although the railroads will continue to be the principal means of transportation, the role of trucks, particularly in intercity and international freight movements, is to become much more important. The plan is to use heavy highway freight trucks to replace rail for movements of less than 250 kilometers.

34. Soviet highways are presently inadequate for conducting intercity motor freight operations on a national scale. Only one-third (about 500,000 kilometers) have paved or gravel surfaces. The rest are dirt roads and impassible, or nearly so, to conventional trucks during part of the year.

35. Most of the highway paving program for the five-year plan that ends at the end of this year (1970) is expected to be carried out. The new long-range plan for 1971-80 calls for constructing 40,000 kilometers of surfaced highway annually by 1975 and an increase to 100,000 kilometers annually by 1980. Priority will be given to highways linking Moscow with the capitals and large cities of the republics.

Conclusions

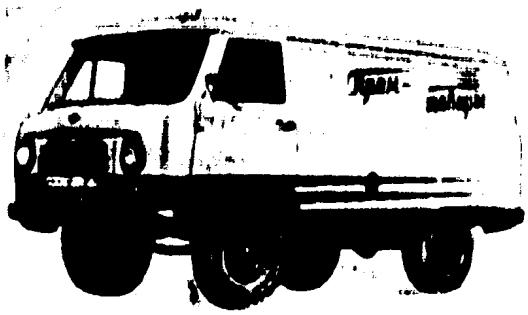
36. Truck production has been lagging behind the needs of the economy for many years. New capacity that was to have been finished by 1970 is far from complete. There now are serious shortages of trucks for both military and civilian uses. The economy is particularly short of large cargo trucks for general transport service, special trucks for construction and agriculture, and small trucks for pickup and delivery service.

37. The government is belatedly undertaking to make unusually large investments, both to expand existing production facilities and to build new ones. The major expenditures will be directed toward providing, by the latter half of the 1970s, large

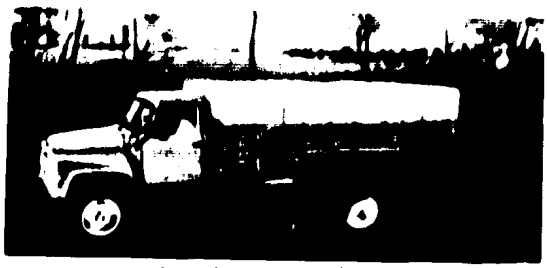
numbers of heavy tractor-trailer combinations for intercity transportation service.

38. The USSR is anxious to obtain the most modern equipment available in the Free World, both for modernizing existing plants and for constructing the new heavy truck complex at Naberezhnyye Chelny. Without major Free World technical assistance and equipment, the latter plant almost certainly will not be able to start production by 1974 as planned, and its technology would lag well behind that of the West.

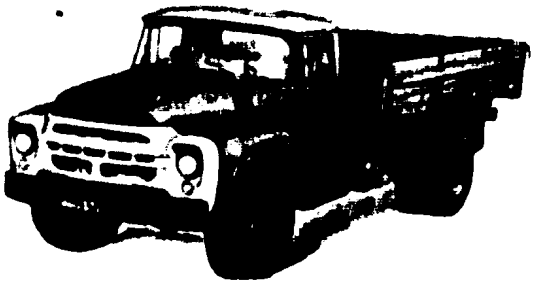
Typical Soviet Truck Models



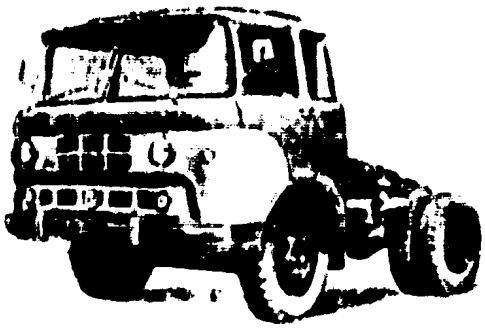
UAZ-451 DM Ul'yanovsk



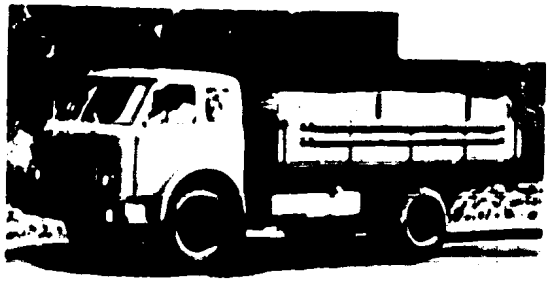
GAZ-53A Gor'kiy



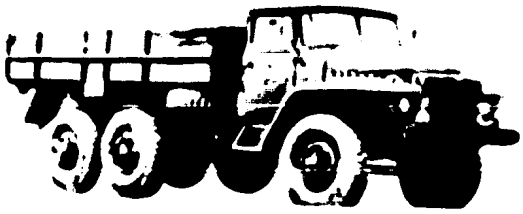
ZIL-130 Moscow



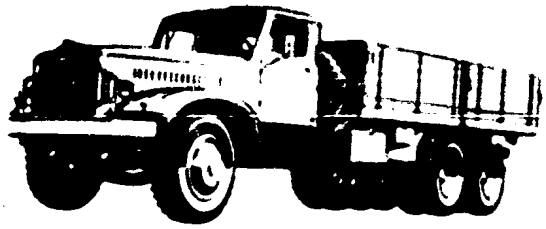
KAZ-606A Kutaisi



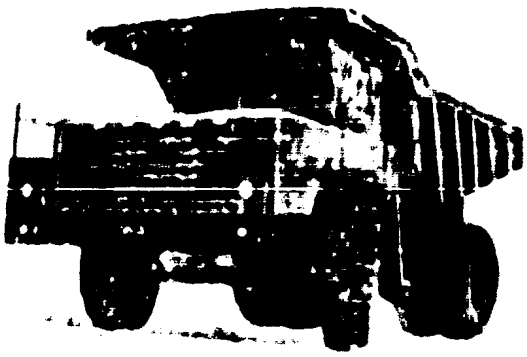
MAZ-500 Minsk



Ural-377 Miass



KrAZ-257 Kremenchug



BelAZ-540 Zhodino